IR Multichannel and Lightning a contribution to GOES-R and Nowcasting - The CHUVA Project

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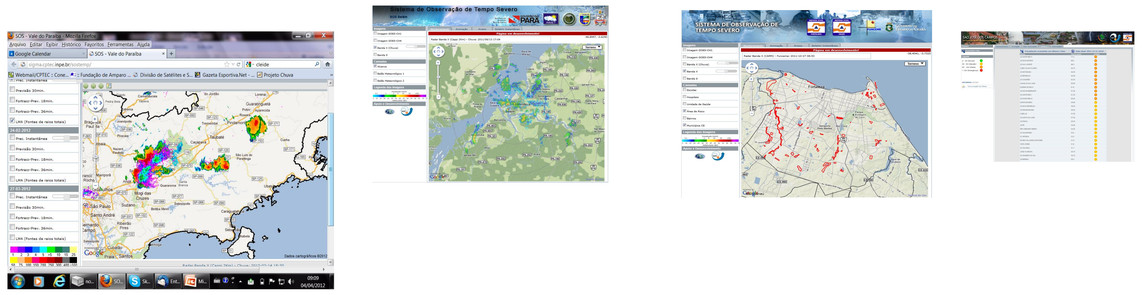
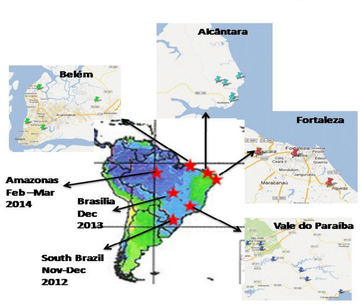
The CHUVA Project

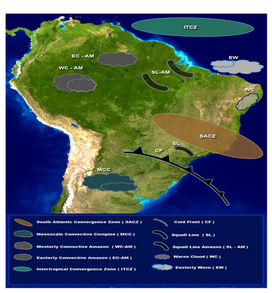
The Cloud processes of the main precipitation systems in Brazil: A contribution to cloud resolving modeling and to the GPM (CHUVA Project) is a project designed to measure the cloud processes of the main precipitating systems in Brazil to improve precipitation estimation from satellite over land and the knowledge of cloud microphysics. The fourth campaign was jointed with the GOES-R Geostationary Lightning Mapper - pre-launch algorithm validation. 3-D Lightning Mapping Array, Dual Pol X band radar and several others instruments were employed.

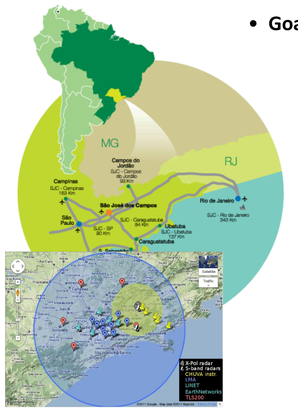
Nowcasting : The SOS (Severe Weather Observation System)



Field Campaigns

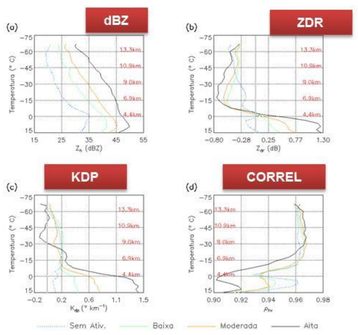


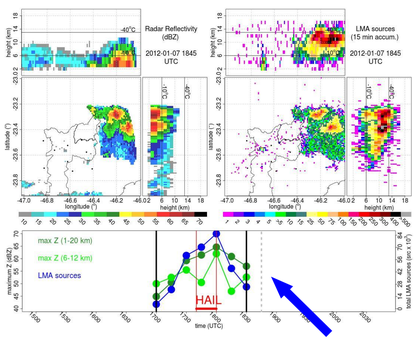




CHUVA-Lightning Mapping Campaign:
CHUVA-GLM Vale do Paraíba

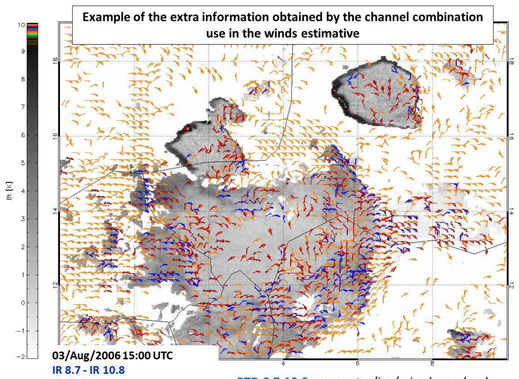
- **Goals:**
  - Besides CHUVA main goals (*precipitation measurements*) ...
  - Contribute to **GOES-R GLM** and **MTG LI** activities by collecting total lightning data under MSG coverage:
    1) **Lightning Location Systems intercomparisons:**
       - Understand the differences between ground based LLS in respect to TRMM LIS;
       - Generate GLM and LI proxy data.
    2) **Develop multi-sensor and multi-platform algorithms:**
       - satellite QPE;
       - nowcasting of severe weather.





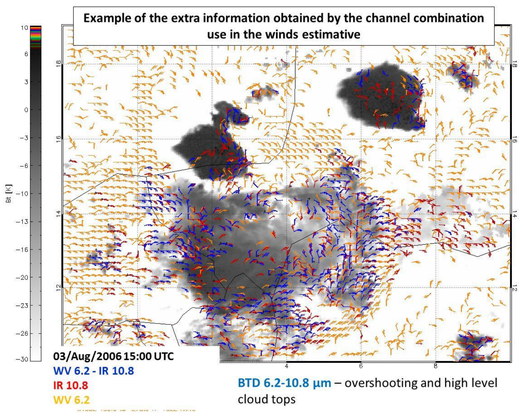
"Lightning Jump": Very rapid increase in incloud lightning activity has been associated to severe weather (tornadoes, hail and damaging winds) **[Gatlin and Goodman 2010; Schultz et al. 2011]**

Deep convective cloud tops dynamics and Cloud Types using IR multichannel



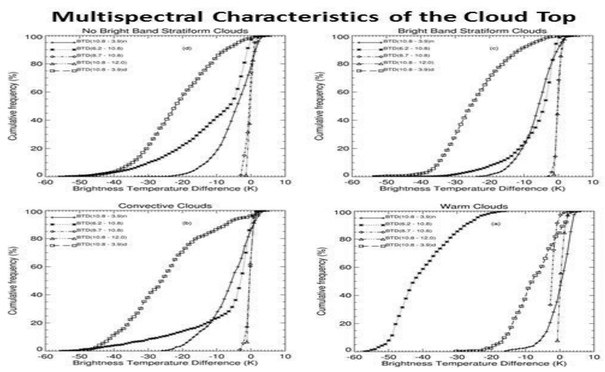
03/Aug/2006 15:00 UTC
IR 8.7 - IR 10.8
IR 10.8
WV 6.2

BTD 8.7-10.8μm – water/ice/mix phase clouds



03/Aug/2006 15:00 UTC
WV 6.2 - IR 10.8
IR 10.8
WV 6.2

BTD 6.2-10.8 μm – overshooting and high level cloud tops



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